

The first structurally proved copper(II) complex simultaneously containing salicylato mono- and dianions. X-ray crystal structure, spectral and magnetic properties of the trimeric  $[\text{Cu}_3\{3,5\text{-(NO}_2)_2\text{sal}^{2-}\}_2\{3,5\text{-(NO}_2)_2\text{sal}^{1-}\}_2(\text{H}_2\text{O})_4]\cdot 4\text{H}_2\text{O}$ .

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Streszczenie

Copper(II) salts react with 3,5-dinitrosalicylic acid to give complex of the composition  $[\text{Cu}_3\{3,5\text{-(NO}_2)_2\text{sal}^{2-}\}_2\{3,5\text{-(NO}_2)_2\text{sal}^{1-}\}_2(\text{H}_2\text{O})_4] \cdot 4\text{H}_2\text{O}$  (3,5-(NO<sub>2</sub>)<sub>2</sub>sal<sup>K-</sup>=3,5-dinitrosalicylato anion). The complex was characterized by elemental microanalysis, electronic, IR and EPR spectra and magnetic susceptibility measurements and the crystal structure of the complex has been determined and refined. Structure of the complex comprises of the centrosymmetric  $[\text{Cu}_3\{3,5\text{-(NO}_2)_2\text{sal}^{2-}\}_2\{3,5\text{-(NO}_2)_2\text{sal}^{1-}\}_2(\text{H}_2\text{O})_4]$  molecules and the water molecules which are held together by system of different types of hydrogen bonds and van der Waals interactions. The Cu(1) atom is centrosymmetrically coordinated by two 3,5-dinitrosalicylato dianions, thus forming the square planar CuO<sub>4</sub> chromophore. The satellite Cu(2) atom is coordinated by one oxygen atom of bridging 3,5-dinitrosalicylato dianion, two oxygen atoms of chelating 3,5-dinitrosalicylato monoanion (in the phenolato form), and by two water oxygen atoms in the square pyramidal coordination polyhedron. Variable-temperature magnetic susceptibility measurements (1.9–300 K) show the occurrence of significant ferromagnetic interactions caused by *syn-anti* conformation of carboxylato bridges within the trimer. The EPR spectroscopy is in agreement with the molecular structure of the complex and magnetic properties, indicating superposition spectra of copper centres (*S*=1/2) with square-planar and square pyramidal coordination polyhedrons ( $g_{\parallel}$ =2.32,  $g_{\perp}$ =2.05).

Słowa kluczowe

Copper, Ion, 5-Dinitrosalicylate complex, Crystal structure, Trimer, Spectral, Magnetic properties

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